

## GENERAL INDEX TO VOLUME XXX

New scientific names of plants and the final members of new combinations are printed in **bold-face type**; synonyms and page numbers having reference to figures and plates, in *italics*; and previously published names and all other matter, in ordinary type.<sup>1</sup>

### A

- Agars used for plating yeasts, 72  
 Alismaceae of Panama, 100  
 American carboniferous floras, Contributions to our knowledge of: VI. Certain Filicinean fructifications, 429  
 Anatomy, vascular, of the cycadeoid cone axis, On the, 421  
 Anderson, Edgar. The seeds of *Tradescantia micrantha*, 69; A variety of maize from the Rio Loa, 469; and R. H. Barlow. The maize tribute of Moctezuma's empire, 413; Isabel Kelly and. Sweet corn in Jalisco, 403  
 Andrews, Henry N. Contributions to our knowledge of American carboniferous floras. VI. Certain Filicinean fructifications, 429; On the vascular anatomy of the cycadeoid cone axis, 421  
 Anemia sp., 430  
 Anemone, 9; *hirsutissima*, 43; *patens* var. *hirsutissima*, 43; sect. *Pulsatilla*, 9  
 Anheuser-Busch yeast investigations, 71  
 Annonaceae, Panamanian, 86  
 Aristida planifolia, 145  
 Asterotheca, 429, 436; *parallela*, 436; *truncata*, 436  
*Astragene*, 1, 2; *zeylanica*, 1  
 Atole in Jalisco, 410  
 Atotonilco el Grande, page from 'Matricula' devoted to tribute of, 420  
 Axonopus caespitosus, 185  
 Aztec tributes, 413

### B

- Bailey, L. H. Palmaceae of Panama, 327  
 Banisteria schizoptera, 94  
 Banisteriopsis inebrians, 94; *lucida*, 94; *scalariformis*, 93  
 Barlow, R. H., Edgar Anderson and. The maize tribute of Moctezuma's empire, 413  
 Barometric pressure, effect of, on tree growth, 450

- Begonia conchaefolia*, 95; *Pittieri*, 95; *pumilio*, 95  
 Begoniaceae, Panamanian, 95  
 Beilmann, August P. Some hourly observations of tree growth, 443  
 Blandy Experimental Farm, corn grown at, 407, 409  
 Bocas del Toro, Miscellaneous collections, chiefly by H. von Wedel, in, 83  
 Bromeliaceae of Panama, 83  
 Butomaceae of Panama, 103

### C

- Calyptanthus tumidonodia*, 95  
 Carbohydrate protein mash agar for plating yeasts, 72  
 Carboniferous floras, Contributions to our knowledge of. VI. Certain Filicinean fructifications, 429  
 Catopsis Berteroniana, 83; *micrantha*, 83, 83; *Morreniana*, 84; *nitida*, 84; *nutans*, 83  
 Chile, a variety of maize from, 469  
 Ciona, cross-fertilization of, 461  
*Clarisia mexicana*, 85; *matogrossensis*, 85; *mollis*, 85  
 Clematis section *Viorna*, Taxonomy of, 1, 12; distribution of species, 6, 7  
 Clematis, 12; *Addisonii*, 18; *Addisonii*, 19; *albicoma*, 37; *arizonica*, 48; sect. *Atragene*, 9; *Bakeri*, 43; subsect. *Baldwinianae*, 41; *Baldwinii*, 41; *Beadlei*, 24; *Bigelovii*, 49; *Bigelovii*, 48, var. *arizonica*, 48; *coccinea*, 21, var. *major*, 21, var. *parviflora*, 21, var. *segrezianus*, 21; *coloradoensis*, 25; *cordata*, 31; "Countess of Onslow," 11; *crispa*, 31; *crispa* var. *Walteri*, 31; *cylindrica*, 31; *dictyota*, 30; *divaricata*, 31; *Douglasii*, 42, var. *Bigelovii*, 43, 48, *γ*, *Jonesii*, 43, *a. normalis*, 43, *a. normalis* 2. *erectisejala*, 43, *f. pulsatilloides*, 43, var. *rosea*, 43, var. *Scottii*, 47, *β*, *Wyethii*, 43; "Duchess of Albany," 11; *erriophora*, 43; subsect. *Euviornae*, 14; *filifera*, 30,

<sup>1</sup> For Woodson & Schery's "Flora of Panama" only the plant families and new entities will be included in the ANNALS Index, since a complete Index will be appended at the end of each volume of the "Flora."

- var. *incisa*, 30; *flaccida*, 17; sect. *Flammula*, 9; *Fremontii*, 39, distribution of, 63, leaf outline, 40, var. *RiehlII*, 40, 62, 63, distribution of, 63, 65, leaf outline, 40, mature plant of, growing on glade, 66; *fusca*, 9; *Gattingeri*, 17; *glaucophylla*, 19; *Henryi*, 9; *hirsutissima*, 42, var. *arizonica*, 48, var. *Scottii*, 47; subsect. *Hirsutissimae*, 42; *integrifolia*, 9,  $\gamma$ . *Fremontii*, 39, *a. ochroleuca*, 35, *a. ochroleuca c. crispiflora*, 35, *a. ochroleuca b. cylindrica*, 35, *a. ochroleuca d. incisodentata*, 35, *a. ochroleuca a. parviflora*, 35, *a. ochroleuca e. subverticillata*, 35, *a. ochroleuca 2. tomentosa*, 35,  $\beta$ . *ovata*, 35,  $\beta$ . *ovata 2. subglabra*, 35; subsect. *Integrifoliae*, 35; "Jackmani," 10; *Jonesii*, 43; *lanuginosa*, 9; *lineariloba*, 31; *obliqua*, 31; *ochroleuca*, 35; *ochroleuca*, 37, var. *Fremontii*, 39, var. *ovata*, 35, var. *sericea*, 36, 37; *ovata*, 18, 35, 37, 38; *Palmeri*, 48; *paniculata*, 10; *Pitcheri*, 25, var. *filifera*, 30; *Pitcheri*, 31, var. *Bigelovii*, 49, var. *lasiostylis*, 25, 29, var. *leiostylis*, 25, var. *Sargentii*, 25; *plattensis*, 47; *reticulata*, 22; *rosea*, 50; *Sargentii*, 25; *Scottii*, 47, var. *erriophora*, 43; *sericea*, 35; *Simsii*, 25, 31,  $\delta$ . *filifera*, 30, 2. *lasiostylis*, 25, 1. *leiostylis*, 25,  $\gamma$ . *lobata*, 25,  $\beta$ . *normalis*, 25, *a. Pitcheri*, 25, *a. Pitcheri 3. chrysocarpa*, 25, *a. Pitcheri 2. micrantha*, 25, var. *Sargentii*, 25; *striata*, 50; *texensis*, 21, var. *parviflora*, 21, var. *typica*, 21; *troutbeckiana*, 20; *uniflora*, 35; sect. *Urnigeræ*, 12; *versicolor*, 20, *f. pubescens*, 22; *Viorna*, 14, var. *flaccida*, 17; *Viorna*, 17, 19, var. *coccinea*, 21,  $\delta$ . *coccinea*, 21,  $\delta$ . *coccinea 2. parviflora*, 21,  $\delta$ . *coccinea 3. segreziana*, 21,  $\gamma$ . *normalis*, 14, var. *Pitcheri*, 25,  $\beta$ . *reticulata*, 22, 25,  $\beta$ . *reticulata 3. flavida*, 22,  $\beta$ . *reticulata 2. membranacea*, 25, *reticulata 5. obtusifolia*, 25, *reticulata 4. Sargentii*, 25; sect. *Viorna*, 1, 12; *viornioidea*, 18; *Vitalba*, 10; *viticaulis*, 38; *Viticella*, 35; *Viticella a. crispa*, 31, *a. crispa 2. leiostylis*, 31, *a. crispa 1. pilostylis*, 31; *Viticella \gamma. Walteri*, 31,  $\gamma$ . *Walteri 2. lineariloba*, 31; subsect. *Viticellæ*, 31; *Walteri*, 31; *Wyethii*, 43
- Clematis Fremontii* var. *RiehlII*, Population size and geographical distribution of, 63, 65
- Clematidis crispa*, 31
- Coal-beds, fossil plants found in, 429
- 'Codex Mendocino,' 413
- Colonies of commercial yeasts, environmental and genetical variations in yield and size, 71, 80, 82
- Contributions to our knowledge of American carboniferous floras. VI. Certain Filicinean fructifications, 429
- Contributions toward a flora of Panama. VII. Miscellaneous collections, chiefly by H. von Wedel in Bocas del Toro, 83
- Copulation, Segregation, mutation and, in *Saccharomyces cerevisiae*, 453
- Corn: A variety of, from the Rio Loa, 469, 474; as a tribute of Moctezuma's empire, 413; Sweet, in Jalisco, 405, 412, cytology of, 409, internode diagram of a typical plant, 408, longitudinal section of a kernel, 406; prehistoric, 472, 474
- Cross-fertilization mechanism of yeasts and other plants, 461
- Cultural data on sweet corn in Jalisco, 410
- Cycadaceae of Panama, 97
- Cycadeoid cone axis, On the vascular anatomy of the, 421
- Cycadeoidea, 421, 422; *Broxiana*, 424, 424, 425, 426, 427, taxonomy of, 423; *Wielandii*, 422
- Cyclanthaceae of Panama, 396
- Cymbopetalum magniflorum, 87
- Cyperaceae of Panama, 281
- Cytology: of Jaliscoan sweet corn, 409; of section *Viorna* of *Clematis*, 10
- D
- Dactylothea*, 429, 436; *plumosa*, 432
- Daylight, relation of, to tree growth, 445, 450
- Dendrograph record of tree growth, 444
- Digitaria hirsuta*, 172
- Diplophase cultures of *Saccharomyces cerevisiae*, 454, 457, 465
- E
- Economic value of species of *Clematis*, 10; of Jaliscoan sweet corn, 409
- Environmental and genetical variations in yield and colony size of commercial yeasts, 71
- Environmental conditions, effect of, on tree growth, 443
- Erickson, Ralph O.: Population size and geographical distribution of *Clematis Fremontii* var. *RiehlII*, 63; Taxonomy of *Clematis* sect. *Viorna*, 1
- Esquite, preparation of, in Jalisco, 411
- Euchlaena*, 473
- F
- Ferns, Fossil, 429

Ferris Mountains of Wyoming, fossil cycad locality in, 421

*Festuca chiriquensis*, 116

Filicenean fructifications, Certain, 429

Flora of Panama: Part II, Fascicle 1, 97;

Fascicle 2, 281; Contributions toward a, VII. Miscellaneous collections, chiefly by

H. von Wedel in Bocas del Toro, 83

Fossil cycads, 421

## G

Genetical variations, Environmental and, in yield and colony size of commercial yeasts, 71, 80, 82

Genetics: of Jalisco sweet corn, 405; of a variety from the Rio Loa, 469

Geographical distribution of *Clematis Fremontii* var. *Riehlii*, 63

Glades, dolomitic, growth of *Clematis Fremontii* var. *Riehlii* on, 64, 65, 66

Glyphs in the 'Matricula de Tributos,' 413, 419

Gramineae of Panama, 104

Growth of the tree, effect of environment on, 443

*Guzmania coriostachya*, 84; *Donnellsmithii*, 84; *nicaraguensis*, 84

## H

Haplophase cultures of *Saccharomyces cerevisiae*, 453, 457, 464, 466; segregation and mutation of, 456; copulations between, 460, 461

Heterogeneity of commercial yeasts, 73, 74

*Hoffmannia aeruginosa*, 96

Humidity, relative, effect of, on tree growth, 449

Hybrid yeasts, 453

Hygro-thermograph, 449

Hymenomycetes, cross-fertilization mechanism of, 462

## I

Isacaceae, Panamanian, 95

Instruments for recording activities of the tree, 444

## J

Jalisco, Sweet corn in, 405; cytology of, 409; distribution of, 409; internode diagram of typical plant, 408; longitudinal section of kernel, 406; two ears from Unión de Tula, 412; morphology of, 406; uses of, 409

## K

Kelly, Isabel, and Edgar Anderson. Sweet corn in Jalisco, 405

## L

*Lasiacis longiligula*, 232; *lucida*, 231

Leguminosae, Panamanian, 88

*Leretia cordata*, 95

Lindgren, Carl C. and Gertrude Lindgren: Environmental and genetical variations in yield and colony size of commercial yeasts, 71; Segregation, mutation, and copulation in *Saccharomyces cerevisiae*, 453

Lindgren, Gertrude, see Lindgren, Carl C. Loa, Rio, A variety of maize from the, 469, 474

*Lonchocarpus monofoliaris*, 89; *unifolius*, 90

*Luziola subintegra*, 165

## M

*Macrolobium floridum*, 88; *ischnocalyx*, 88; *modicopetalum*, 88; *punctatum*, 89

Maize: in Jalisco, 405; tribute of Moctezuma's empire, The, 413; A variety of, from the Rio Loa, 469, 474, morphology of, 467, internode diagrams of plants, 471; prehistoric, 467, 474

Malpighiaceae, Panamanian, 93

Malt-dextrose agar for plating yeasts, 72

Marattiaceae, 434

'Matricula,' page of, showing tributes of Atotonilco el Grande, 420

Maydeae, 473

Media used in yeast investigations, 71; growth of yeast colonies on, 80, 82

Mexican corn, 405, 413, 469

Mexico, Moctezuma's empire in, 413

Moctezuma's empire, The maize tribute of, 413; map showing approximate distribution of, at time of conquest, 417; provinces of, 413, 415; area from which tribute collected, 417

Moraceae, Panamanian, 85

*Morinda citrifolia*, 96

Morocho, 467

*Muhlenbergia attenuata*, 138; *emersleyi*, 139

Mutation, Segregation, and copulation in *Saccharomyces cerevisiae*, 453

Myrtaceae, Panamanian, 95

## N

*Nadsonia*, budding of, 463

Nahuatl tributes, 413

Naravelia, 1, 9  
 Nazca corn, 469, 472, 474  
 Neea pycnantha, 85; xanthina, 86  
 Neurospora, cross-fertilization mechanism of, 462  
 Nutrients, relation of, to yeast yields, 71  
 Nyctaginaceae, Panamanian, 85

## O

Oak, Bur, hourly observations of growth of, 444  
 Oriental vs. Occidental varieties of corn, 469, 472  
 Ormosia fastigiata, 92; panamensis, 92; stipitata, 90, 91

## P

Paleobotany, 421, 429  
 Palmaceae of Panama, 327  
 Panama: Contributions toward a flora of. VII. Miscellaneous collections, chiefly by H. von Wedel in Bocas del Toro, 83; Flora of, Part II, Fascicle 1, 97; Fascicle 2, 281  
 Panicum rigidum, 215  
 Paramecium, cross-fertilization mechanism of, 462  
 Pariana strigosa, 257  
 Pecopteris plumosa var. dentata, 430, 432, 439; venation and shape of superior and inferior basal pinnules of, 433  
 Pharus longifolius, 163  
 Phyllonoma ruscifolia, 88  
 Physiological activity of trees, effect of environment on, 443  
 Pinole, preparation of, in Jalisco, 411  
 Pitcairnia aphelandraeflora, 84  
 Plating technique for purification of yeast mixtures, 73  
 Ponteduro, preparation of, in Mexico, 411  
 Population size and geographical distribution of Clematis Fremontii var. Riehlii, 63  
 Precipitation, effect of, on tree growth, 448  
 Prehistoric corn, 469, 474  
 Pressure, barometric and internal, effect of, on tree behavior, 450  
 Prune agar for plating yeasts, 72  
 Psychotria solitudinum, 96  
 Pulsatilla hirsutissima, 43; patens subsp. hirsutissima, 43

## Q

Quercus macrocarpa, hourly observations of growth of, 444

## R

Rhizopus, cross-fertilization mechanism of, 461  
 Rio Loa, A variety of maize from the, 469  
 Rubiaceae, Panamanian, 96

## S

Saccharomyces apiculatus, spores of, 463  
 Saccharomyces cerevisiae: Segregation, mutation and copulation in, 453, 464, 465, 466; life cycle of, showing relationship with Torula and Zygosaccharomyces, 459  
 Saccharomycetes, 453  
 Sauer, Carl and Jonathan, Maize collection of, 469  
 Saxifragaceae, Panamanian, 88  
 Schery, Robert W., Robert E. Woodson, Jr. and: Contributions toward a flora of Panama. VII. Miscellaneous collections chiefly by H. von Wedel in Bocas del Toro, 83; and collaborators. Flora of Panama, Part II, Fascicle 1, 97; Fascicle 2, 281  
 Schizaeaceae, 429  
 Schubert, B. G., L. B. Smith and. Panamanian Begoniaceae determined by, 95  
 Scoleopteris, 434; Radforthii, 435, 440, 441, 442; parallela, 436; truncata, 436  
 Seeds of Tradescantia micrantha, The, 69, 69  
 Segregation, mutation and copulation in Saccharomyces cerevisiae, 453  
 Senftenbergia, 429; plumosa var. Jonesii, 430, 438, 440  
 Smith, L. B., Panamanian Bromeliaceae determined by, 83; and B. G. Schubert. Panamanian Begoniaceae determined by, 95  
 Soil temperatures, effect of, on tree growth, 448  
 Spanish tribute in Mexico, 413  
 Standley, P. C., Panamanian plants determined by: Moraceae, 85; Nyctaginaceae, 85; Rubiaceae, 96  
 Sunshine, effect of, on tree growth, 445, 450  
 Svenson, H. K. Cyperaceae of Panama, 281  
 Swallen, Jason R., Gramineae of Panama, 104  
 Swartzia caribaea, 93; nuda, 92  
 Sweet corn in Jalisco, 405

## T

Taxaceae of Panama, 98  
 Taxonomy of Clematis section Viorna, 1  
 Temperature: air, effect of, on tree growth, 444, 450; internal, of trees, effect of, on

growth, 447; of soil, effect of, on tree growth, 448; wind movement and, 450  
*Thecophyllum pedicellatum*, 84  
*Thrasya ciliatifolia*, 175; *gracilis*, 176  
*Tillandsia adpressa* var. *Tonduziana*, 84;  
*fasciculata* var. *convexispica*, 84, var.  
*unispica*, 84; *guanacastensis*, 85; *nutans*,  
 83; *singularis*, 85  
*Tlapalizquioxchitl* tree, 414, 414  
*Torula*, 462; haploid cultures of, 453; life  
 cycle of, 459  
*Torulopsis*, 453, 462; life cycle of, 459  
*Tradescantia brachyphylla*, 69; *micrantha*,  
 Seeds of, 69, 69; *Wrightii*, 69  
 Transpiration, effect of, on tree tempera-  
 ture, 446  
 Tree growth, Some hourly observations on,  
 443  
 Tribute list of Moctezuma's empire, the  
 original, 413; page from, 419  
 Tribute, The maize, of Moctezuma's em-  
 pire, 413; area from which collected,  
 417, 417; interval of payment, 417;  
 provinces paying, 415; size of, 416  
*Triuridaceae* of Panama, 104  
*Typhaceae* of Panama, 99

## V

Variations, Environmental and genetical,  
 in yield and colony size of commercial  
 yeasts, 71, 80, 82  
 Vascular anatomy of the cycadeoid cone  
 axis, On the, 421  
*Viburnum*, 12  
*Viorna*, Taxonomy of *Clematis*, section, 1,  
 3; distribution of species of, 6, 7, 8  
*Viorna*, 12; *Addisonii*, 18; *albicoma*, 37;  
*arizonica*, 48; *Bakeri*, 43; *Baldwinii*, 41;  
*Beadlei*, 24; *Bigelovii*, 49; *coccinea*, 22;  
*crispa*, 31, var. *Walteri*, 31; *cylindrica*,  
 31; *dictyota*, 30; *Douglasii*, 43, mut.  
*rosea*, 43; *eriophora*, 43; *filifera*, 30;  
*flaccida*, 17; *Fremontii*, 39; *Gattingeri*,  
 17; *glaucophylla*, 19; *hirsutissima*, 43;

*Jonesii*, 43; *obliqua*, 31; *ochroleuca*, 35,  
 37; *ovata*, 37; *Palmeri*, 49; *Pitcheri*, 25;  
*reticulata*, 22; *Ridgwayi*, 14; *Scottii*, 47;  
*Simsii*, 25; *subreticulata*, 22, 24; *urni-  
 gera*, 14; *versicolor*, 20; *Viorna*, 14;  
*Wyethii*, 43  
*Viticella*, 1; *crispa*, 31  
*Vouapa Pittieri*, 89

## W

Water absorption, effect of, on tree growth,  
 446, 448  
 Weather, effect of, on physiological pro-  
 cesses of the tree, 443  
 von Wedel, Miscellaneous collections of, in  
 Bocas del Toro, 83  
 Wind movement, effect of, on tree growth,  
 450  
 Woodson, Robert E., Jr. and Robert W.  
 Schery: Contributions toward a flora of  
 Panama. VII. Miscellaneous collections  
 chiefly by H. von Wedel in Bocas del  
 Toro, 83; and collaborators. Flora of  
 Panama, Part II. Fascicle 1, 97; Fascicle  
 2, 281  
 Wyoming, fossil cycad locality in, 421

## X

*Xylopia amazonica*, 87; *bocatorena*, 86;  
*brasiliensis*, 87

## Y

Yeasts: cross-fertilization mechanism of,  
 462; rough, 455; smooth, 455; size of  
 colonies, 71, 80, 82; Segregation, muta-  
 tion and copulation of, 453; commercial,  
 Environmental and genetical variations in  
 yield and colony size of, 71, 80, 82

## Z

*Zea Mays*, 280, 405, 467  
*Zeugites mexicana*, 128, 129; *panamensis*,  
 128